Simulated performance of diffractive optical elements using a Helmholtz equation solver

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The alternating-direction-jmpljch finite-difference technique [G. R. Hadley, Opt. Lett. 19, 84 (1 994)] is used to simulate diffraction from structures fabricated by electron beam lithography. The technique properly treats the surface-relief boundary conditions and allows fabrication errors such as side-wall etching to be invest igated. Applications considered include cylindrical lenses, gratings, and computer generated holograms.